

Remarks

This application has been reviewed in light of the Nonfinal Office Action of April 19, 2006. Claims 1-17 are pending, and all claims are rejected. In response, claims 1 and 12 are amended; claims 5, 6, and 13 are cancelled, without prejudice; new claims 18-23 are added; and the following remarks are submitted. Reconsideration of this application, as amended, is requested.

Ground 1. Claims 1, 3, 4, and 8 are rejected under 35 USC 102 as anticipated by Takada U.S. Patent 6,291,761. Applicant traverses this ground of rejection.

The following principle of law applies to sec. 102 rejections. MPEP 2131 provides: "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The identical invention must be shown in as complete detail as is contained in the ... claim. The elements must be arranged as required by the claim..." [citations omitted] This is in accord with the decisions of the courts. Anticipation under section 102 requires 'the presence in a single prior art disclosure of all elements of a claimed invention arranged as in that claim.' Carella v. Starlight Archery, 231 USPQ 644, 646 (Fed. Cir., 1986), quoting Panduit Corporation v. Dennison Manufacturing Corp., 227 USPQ 337, 350 (Fed. Cir., 1985).

Thus, identifying a single element of the claim, which is not disclosed in the reference, is sufficient to overcome a sec. 102 rejection.

Claim 1 is amended to incorporate the limitations of as-filed claims 5 and 6, which were not rejected on this ground.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Ground 2. Claims 1, 3, and 5 are rejected under 35 USC 102 as anticipated by Ichinose U.S. Patent 6,051,778. Applicant traverses this ground of rejection.

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Claim 1 is amended to incorporate the limitations of as-filed claim 6, which was not rejected on this ground.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Ground 3. Claims 2, 5, 6, and 7 are rejected under 35 USC 103 over Takada and further in view of Mowles U.S. Pub. 2002/006285 8. Claims 5 and 6 have been cancelled, and their limitations incorporated into claim 1. Applicant traverses this ground of rejection as applied to claims 1, 2, and 7.

MPEP 2142, under ESTABLISHING A PRIMA FACIE CASE OF OBVIOUSNESS, provides: "To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. [citations omitted]. See MPEP para 2143-2143.03 for decisions pertinent to each of these criteria."

The first of the requirements of MPEP 2142 is that "there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the reference teachings." The present rejection is a sec. 103 combination rejection. To reach a proper teaching of an article or process through a combination of references, there must be stated an objective motivation to combine the teachings of the references, not a hindsight rationalization in light of the disclosure of the specification being examined. MPEP 2142, 2143 and 2143.01. See also, for example, In re Fine, 5 USPQ2d 1596, 1598 (at headnote 1) (Fed. Cir. 988), In re Laskowski, 10 USPQ2d 1397, 1398 (Fed. Cir. 1989), W.L. Gore & Associates v. Garlock, Inc., 220 USPQ 303, 311-313 (Fed. Cir., 1983), and Ex parte

Levengood, 28 USPQ2d 1300 (Board of Appeals and Interferences, 1993); Ex parte Chicago Rawhide Manufacturing Co., 223 USPQ 351 (Board of Appeals 1984). As stated in In re Fine at 5 USPQ2d 1598:

"The PTO has the burden under section 103 to establish a prima facie case of obviousness. [citation omitted] It can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references."

And, at 5 USPQ2d 1600:

"One cannot use hindsight reconstruction to pick and choose among isolated disclosures in the prior art to deprecate the claimed invention."

Following this authority, the MPEP states that the examiner must provide such an objective basis for combining the teachings of the applied prior art. In constructing such rejections, MPEP 2143.01 provides specific instructions as to what must be shown in order to extract specific teachings from the individual references:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention when there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. In re Fine, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); In re Jones, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992)."

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"The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests

the desirability of the combination." In re Mills, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)."

* * * * *

"A statement that modifications of the prior art to meet the claimed invention would have been 'well within the ordinary skill of the art at the time the claimed invention was made' because the references relied upon teach that all aspects of the claimed invention were individually known in the art is not sufficient to establish a prima facie case of obviousness without some objective reason to combine the teachings of the references. Ex parte Levengood, 28 USPQ2d 1300 (Bd.Pat.App. & Inter. 1993)."

Here, there is set forth no objective basis for combining the teachings of the references in the manner used by this rejection, and selecting the helpful portions from each reference while ignoring the unhelpful portions. An objective basis is one set forth in the art or which can be established by a declaration, not one that can be developed in light of the present disclosure. In this case, Takada teaches an insulating layer 308 made of polyimide-based insulating tape having a thickness of 200 micrometers (col. 18, lines 8-10). Mowles teaches an insulating layer 22 which is not "an electrical insulator layer overlying and contacting the front face of the photovoltaic energy source," as recited in the claims, and is not positioned in an analogous manner to the insulating layer 308 of Takada. As the explanation of the rejection points out, the insulating layer 22 of Mowles is to electrically isolate the entire device, not to overlie and contact the front face. The insulating layer of Mowles is not at all relevant to that recited in the present claims. There is another important reason why the teachings of these references cannot be combined. Takada teaches the use of the insulating layer 308, but as clearly shown in Figure 2A and others and in the text of Mowles, Mowles teaches that the conductor 26 is deposited directly on a transparent conductor 25, which overlays the photovoltaic layer 24. That is, Mowles teaches against "an electrical insulator layer overlying and contacting the front face of the photovoltaic energy source," as recited in claim 1. Accordingly, there is no basis for combining the teachings of these references. If the rejection is maintained, Applicant asks that the

Examiner set forth the objective basis found in the references themselves for combining the teachings of the references, and for adopting only the helpful teachings of each reference and disregarding the unhelpful teachings of the reference. Thus, as it stands now, the invention as a whole is not prima facie obvious over the combined teachings of the prior art.

The second of the requirements of MPEP 2142 is an expectation of success. There is no expectation of success. At page 4, lines 16-18 of the Office Action, it is argued that because the reference are both concerned with solar cells, there is an expectation of success. Applicant respectfully disagrees. As discussed earlier, Takada teaches an insulating layer 308 made of polyimide-based insulating tape (col. 18, lines 8-10). Mowles teaches an insulating layer 22 which is not "an electrical insulator layer overlying and contacting the front face of the photovoltaic energy source," as recited in the claims that is positioned in an analogous manner to the insulating layer 308 of Takada. As the explanation of the rejection points out, the insulating layer 22 of Mowles is to electrically isolate the entire device, not to overlie and contact the front face. There is no expectation of success in using an insulating layer 22 of Mowles in an entirely different application than that of Takada. Further, the teaching of Mowles against "an electrical insulator layer overlying and contacting the front face of the photovoltaic energy source" mandates against success.

As stated in MPEP 2142, "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. [citations omitted]."

The third of the requirements is that "the prior art reference (or references when combined) must teach or suggest all the claim limitations." In this regard, the following principle of law applies to all sec. 103 rejections. MPEP 2143.03 provides "To establish prima facie obviousness of a claimed invention, all claim limitations must be taught or suggested by the prior art. In re Royka, 490 F2d 981, 180 USPQ 580 (CCPA 1974). All words in a claim must be considered in judging the patentability of that claim against the

prior art. In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970)." [emphasis added] That is, to have any expectation of rejecting the claims over a single reference or a combination of references, each limitation must be taught somewhere in the applied prior art. If limitations are not found in any of the applied prior art, the rejection cannot stand. In this case, the applied prior art references clearly do not arguably teach some limitations of the claims.

Amended claim 1, which now recites the limitations of as-filed claim 5, and which is incorporated into each of the rejected claims, recites in part:

an electrical insulator layer overlying and contacting the front face of the photovoltaic energy source, wherein the electrical insulator layer is selected from the group consisting of oxides and nitrides having a thickness of from about 0.3 to about 2 micrometers," [emphasis added].

Takada teaches away from this limitation, by teaching that its insulating layer is a "polyimide-based insulating tape," and by teaching that its insulating layer 308 has a thickness of 200 micrometers (col. 18, lines 8-10).

Mowles also teaches away from the recited invention, by teaching that there is no "electrical insulator layer overlying and contacting the front face of the photovoltaic energy source."

It is a well-established principle of law that a prima facie case of obviousness may not properly be based on a reference which teaches away from the present invention as recited in the claims.

"A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant. In re Sponnoble, 160 USPQ 237 244 (CCPA 1969)...As "a useful general rule,"..."a reference that 'teaches away'

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can not create a prima facie case of obviousness." In re Gurley, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994)."

A person reading Takada and/or reading Mowles would be led in a direction divergent from the path that was taken by the applicant.

Claims 2 and 7 depend from claim 1, and incorporate its limitations. Accordingly, the combination of teachings of the two references cannot teach the limitations of claims 2 and 7.

Claim 7 further recites in part:

"the electrical insulator layer has a thickness of about 0.5 micrometers."

Takada teaches a polyimide-based insulating tape having a thickness of 200 micrometers (col. 18, lines 8-10) as the insulating layer 308. The insulator layer thickness taught by Takada is 200 times the thickness recited in claim 7.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Ground 4. Claims 9-12, 16, and 17 are rejected under 35 USC 103 over Takada in view of Kaplow U.S. Patent 4,242,580. Applicant traverses this ground of rejection.

Claims 9-11 depend from claim 1 and incorporate its limitations. The combination of teachings cannot teach the limitations of these claims for the reasons stated in relation to the responses to Grounds 1 and 3, which are incorporated herein. Takada, the primary reference, teaches directly away from the limitations of claim 1, and accordingly cannot teach the recited structure.

Claim 12 recites in part:

"the photovoltaic energy source comprises more than two semiconductor layers whose pairwise semiconductor junctions are tuned to various spectral components of the sun" [specification, para. [0002]]

and further recites in part:

"an electrical insulator layer selected from the group consisting of oxides and nitrides. . ."

Neither reference has such a teaching. Takada teaches away from this limitation by teaching that the insulating layer is a polyimide (col. 18, lines 8-10).

Additionally, there is no basis for combining the teachings of Takada and Kaplow. In a concentrator solar cell of the type described by Kaplow, the solar cell becomes quite hot, and there is no reason to believe that a polyimide insulator of the type described by Takada would be operable at that temperature. The sentence bridging pages 5-6 of the Office Action asserts an expectation of success, but does not address this important characteristic of concentrator solar cells and the limitation on materials selection thereby imposed.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Ground 5. Claim 13 is cancelled, claims 14-15 are rejected under 35 USC 103 over Takada in view of Kaplow, and further in view of Mowles. Applicant traverses this ground of rejection.

Applicant incorporates the discussion of Grounds 1, 3, and 4, which address the references and their distinctions.

Claims 14-15 depend from amended claim 12. The combination of Takada and Kaplow does not teach the limitations of claim 12 for the reasons stated in relation to the Ground 4 rejection, and incorporated here. Mowles adds nothing in this regard, except for teaching directly away from the invention by teaching that no insulating layer is used at the front side of the solar cell.

Claim 14 recites in part:

"the electrical insulator layer has a thickness of from about 0.3 to about 2 micrometers."

Claim 15 recites in part:

'the electrical insulator layer has a thickness of about 0.5 micrometers."

As discussed earlier, Takada teaches directly away from the use of an oxide electrical insulator, by teaching a polyimide-based insulator. Mowles teaches directly away from the claimed invention by teaching away from the use of a busbar insulator, and by teaching the use of an oxide at an entirely different, and unrelated, portion of the structure to isolate the device. Takada further teaches the insulating layer 308 having a thickness of 200 micrometers, which is 100 times the maximum permitted thickness recited in claim 14, and 200 times the thickness recited in claim 15. The teaching of Mowles is not relevant, because the insulating layer 22 discussed in para. [0049] of Mowles is not analogous in position or function to the insulating layer 308 of Takada or to the electrical insulating layer recited in the present claims.

Applicant asks that the Examiner reconsider and withdraw this ground of rejection.

Applicant submits that the application is in condition for allowance, and requests such allowance.

CONCLUSION

In view of the above, Applicant respectfully requests reconsideration of the Application and withdrawal of the outstanding objections and rejections. As a result of the amendments and remarks presented herein, Applicant respectfully submits that claims are not anticipated by nor rendered obvious by the cited art either alone or in combination and thus, are in condition for allowance. As the claims are not anticipated by nor rendered obvious in view of the applied art, Applicant requests allowance of all of the remaining claims in a timely manner. If the Examiner believes that prosecution of this Application could be expedited by a telephone conference, the Examiner is encouraged to contact the Applicant.

This Response has been filed within three (3) months of the mailing date of the Office Action and it is believed that no fees are due with the filing of this paper. In the event that Applicants are mistaken in their calculations, the Commissioner is hereby authorized to deduct or charge any additional fees and credit any overpayments determined by the Patent Office to be due from the undersigned's Deposit Account No. 50-1059.

Applicant respectfully requests entry of the above amendment and allowance of the claims.

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